SOUTH CAROLINA
DEPARTMENT OF COMMERCE

THE AUTOMOTIVE INDUSTRY IN SOUTH CAROLINA 2010

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South Carolina
Department of Commerce

South Carolina's Automotive Industry

Fueling the state's economy.

South Carolina's automotive industry dates back to the turn of the century when Milliken & Company made fabric seats and roofs for Henry Ford's gasoline-powered cars.

This tradition shifted into the present when BMW decided to locate its first full manufacturing plant outside of Germany and its only North American assembly plant in South Carolina in 1992. This was very significant automotive news and considered the most important automotive announcement in the South since Toyota's decision to manufacture vehicles in Kentucky in 1985.

BMW joined other leading automotive companies already in South Carolina, including the multiple operations of Michelin and Robert Bosch. These premier automotive companies led the way for other top companies such as Daimler Trucks North America, Honda all-terrain vehicles and many others.

South Carolina's network of approximately 200 automotive-related companies and suppliers represents a major sector of the state's economy and has been crucial in fueling South Carolina's development.

Current Automotive Industry

From Original Equipment Manufacturers to both Tier One and Tier Two suppliers, South Carolina's automotive industry is vast.

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Some of the Tier One auto suppliers are: AMBAC International Corp, Alcoa Mt Holly, Alfmeier Corp, American Eagle Wheel Corp, ArvinMeritor, Associated Fuel Pump Systems Corp, AVM Industries, Behr Heat Transfer Systems, Bellwright Industries Inc, Benteler Automotive, Bosch Rexroth Corp, Boysen USA LLC, Bridgestone Firestone North America Tire LLC, Carlisle Tire & Wheel Co, Caterpillar Inc, Champion Laboratories Inc, Cooper-Standard Automotive Inc, Cummins Atlantic LLC, Cummins Turbo Technologies, DAA Draexlmaier Automotive of America LLC, Dana Corp, Dayco Products Inc, Delphi Automotive Systems, Drive Automotive Industries, Emitec Inc, Faurecia Interior Systems Inc, Fehrer South Carolina LLC, Flexible Technologies, Fluid Routing Solutions Inc, Fraenkische USA LP, Gestamp South Carolina LLC, Haldex Brake Products Corp, Inergy Automotive Systems LLC, Kaiser Aluminum Corp, Kawashima Textiles USA, Kaydon Corp, KOYO Corp of USA, KS Gleitlager USA Inc, Lang-Mekra North America LLC, Laughlin Racing Products, Lear Corp, Magna Mirrors, MGA Research Corp, Michelin North America Inc, Newman Technology South Carolina Inc, Parat Automotive USA Inc, Pierburg Inc, Plastic Omnium LLC, PRETTL North America, Pure Power Technologies LLC (Navistar), PWG USA LP, redi-Group North America LLC, Robert Bosch Corp, Rotorion North America LLC, SEM Products Inc, South Carolina Yutaka Technologies, SpectAL Industries, SPX Filtran, Stankiewicz

International Corp, Suminoe Textiles of America Corp, Thermo Heating Elements, Timken Co, TW Fitting NA, and ZF Lemforder Corp.

South Carolina helped BMW achieve the fastest start-up in the automobile manufacturing industry, 23 months from groundbreaking to the first car rolling off the assembly line in 1994. This dedication to helping businesses establish and prosper has led BMW to continually reinvest in the state. In 2008, BMW announced a $750 million, 1.5 million square-foot second plant. The expansion will also include the doubling in size of BMW's paint booth.

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BMW is just one of many automotive companies thriving in South Carolina. A wide range of companies supporting all aspects of automotive manufacturing – from assemblers, parts suppliers, and raw material producers – are based in South Carolina. There are approximately 81 Tier One automotive suppliers and more than 100 Tier Two suppliers in the state.

South Carolina's OEMS

South Carolina's Nine OEMs demonstrate the state's competitiveness in the global economy.

BMW Manufacturing Co. established operations in Greer, South Carolina, in 1992 and has 5,000 employees. Since beginning production in 1994, BMW has expanded the plant five times; and five different vehicles, plus their variants, have rolled off the assembly line. Production began with the 318i sedan and has included the Z3 and Z4 Roadsters and Coupes. The plant currently is the global producer of the X5 Sports Activity Vehicle and the X6 Sports Activity Coupe. The plant began producing BMW's ActiveHybrid X6 in October 2009 and will officially begin production of the next-generation X3 Sports Activity Vehicle in its new Assembly North building in 2010. The X5 Sports Activity Vehicle was the very first BMW to be officially launched in the United States. BMW exports about 70 percent of its South Carolina output. In addition to

manufacturing, BMW's operation includes an analysis center for engineering and testing, an automated warehouse, an information technology center, and a body shop. A 60,000-square-foot BMW Performance Center, located across from the factory, includes a training/conference center, a vehicle delivery center, and a driver training course. The plant is also home to the Zentrum, a 28,000 square foot exhibition and visitors' center. In addition, BMW has a research facility at Clemson University's International Center for Automotive Research in Greenville, the BMW Information Technology Research Center. The Center is an integral part of BMW's research and development network. *Plant Engineering* magazine named BMW's plant one of its top three outstanding manufacturing facilities for 2006. BMW's investment is approaching $4.6 billion in South Carolina, and its suppliers have invested $2.1 billion. BMW has approximately 40 suppliers in South Carolina, of which many are new to the state, plus 170 suppliers in North America.

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Freightliner Custom Chassis Corporation (FCCC), a subsidiary of Daimler Trucks North America, has built premium, custom chassis for motor homes, buses, and walk-in delivery vans in Gaffney, South Carolina, since 1995. FCCC has a history of technology innovation, including the first-ever hybrid electric motor home chassis and most recently a hydraulic hybrid walk-in van chassis.

Daimler Vans Manufacturing, LLC assembles Sprinter commercial vans in Ladson, South Carolina. The 460,000 square-foot plant opened in 2007 and is capable of producing 32,000 units annually for the United States market. Earlier, Sprinters were imported from Germany and later assembled at FCCC in Gaffney. Sprinter vans are well-known for their unique design and fuel efficiency.

Daimler Trucks North America moved its sales and marketing division (350 jobs) to Fort Mill, South Carolina, from the company's Portland, Oregon, headquarters in 2008. Daimler Trucks

has a new 150,000-sq.-ft. building in Fort Mill and an additional 400 acres of undeveloped land about 18 miles away. The Fort Mill jobs are scheduled to move there in 2012.

Honda of South Carolina Manufacturing, Inc. (HSC) was established in Timmonsville, South Carolina, in 1998 making all-terrain vehicles (ATVs) for the North American and world markets. In 2005, Honda consolidated its North American ATV production in South Carolina. The company also makes multi-purpose engines under the same roof and added a second plant in 2003 that makes personal watercraft (PWC), Honda's only dedicated PWC plant in the world. HSC is one of Honda's 12 major factories in North America and currently has 600 employees.

American LaFrance, LLC moved its headquarters from North Carolina to Summerville, South Carolina, in 1992 and recently moved operations from New York and Pennsylvania to consolidate all its business, fire and vocational vehicle manufacturing, in the state. The company's history goes back 177 years, and American LaFrance is one of the best-known names in the fire truck business. The company offers five models that can be customized with additional features. American LaFrance has a joint venture with Navistar to market its vocational vehicles to customers.

Mobile Armored Vehicles LLC manufactures armored vehicles in Summerville.

Force Protection, Inc. is one of the original manufacturers of ballistic- and blast-protected vehicles used to support armed forces and security personnel. Familiar products include the Cougar, the Buffalo, and the Cheetah. The company also is the developer and manufacturer of ForceArmor™, a bolt-on armor package for a variety of vehicles. Force Protection was founded in 1997 and is headquartered on a 260-acre campus in Ladson, South Carolina, where the company manufactures and conducts R&D and testing. Force Protection has two additional R&D facilities in South Carolina – a blast range in Edgefield and a secure site in Summerville dedicated to technology development and training for end-users. Force Protection has a 50/50 joint venture with General Dynamics Land Systems, Force Dynamics, and another joint venture with NP Aerospace Limited in the United Kingdom.

Road Rescue, Inc., a subsidiary of Spartan Motors, Inc., designs and manufactures a complete line of premium ambulances and emergency-rescue vehicles in Marion, South Carolina. The company just introduced a total wheels up redesign of its custom ambulances featuring numerous technological improvements and enhancements.

Streit USA Armoring LLC designs, manufactures, and markets armored sport utility vehicles for commercial and civilian use in North Charleston, South Carolina. Their ballistic and blast resistant vehicles fully resemble the street versions of the originals.

Higher Education

South Carolina offers a range of cutting edge-research facilities to help automotive companies maintain a flexible position to respond quickly to shifting global demand.

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Clemson University is an acknowledged leader in advanced materials and automotive engineering and is nationally recognized as one of the Top 30 public research universities in the United States. Clemson University offers the nation's only Ph.D. in automotive engineering. With the top-ranked university computational fluid dynamics lab in the United States, Clemson also has other advanced programs and research areas geared toward training and developing automotive-related engineers. The University is making a concerted effort to actively support the growth and development of the automotive industry in the state.

The Clemson Institute for Advanced Materials and Manufacturing (CIAM2) is a partnership between Clemson University, other universities, nonprofit organizations, industry, and government. CIAM2 provides an integrated research and education environment built on a new paradigm – coupling research with rapid, efficient development of new products and processes. The Institute's goal is to incorporate the broad areas of engineering and science to

facilitate cross-disciplinary efforts in finding industrial solutions while enhancing educational opportunities for undergraduate and graduate students.

Clemson University International Center for Automotive Research (CU-ICAR)

A mega-center of automotive, motorsports, aerospace, and mobility expertise where industry and academia come together.

The Clemson University International Center for Automotive Research (CU-ICAR) is an advanced-technology research campus where university, industry, and government organizations engage in unique, synergistic collaboration. It began with Clemson University, the State of South Carolina, and BMW but has grown to include corporate partners like Michelin North America, The Timken Company, IBM, SAE International, and the Richard Petty Driving Experience. This world-class research facility is located on a prominent 250-acre campus in Greenville, South Carolina, in the heart of the I-85 corridor midway between Charlotte, North Carolina and Atlanta, Georgia. CU-ICAR is ideally situated in the epicenter of the growing Southeastern automotive and motorsports region.

CU-ICAR is anchored by the Carroll A. Campbell Jr. Graduate Engineering Center, which includes industrial-scale laboratories and testing facilities accessible to companies and professionals for applied R&D on new technology. The Center has more than $10 million in state-of-the-art facilities and equipment, including: MTS 320 Tire Coupled Road Simulator and Weiss Climate Test Chamber, Renk Labeco 4-Wheel 500 HP Chassis Dyno and Faist Semi-Anechoic Chamber, Zeiss Pro T Compact Dual Column Full Vehicle CMM, FEV 500 HP Engine Dyno Test Cell, and ETS Lindgren Electromagnetic Compatibility Chamber.

The following companies have established relationships with research universities:

CU-ICAR received the Emerging Research/Science Park Award from the Association of University Research Parks at the organization's annual conference in October 2009. The award is presented to a research park that has been in operation less than five years and has excelled in bringing technology from the laboratory to viable business activities while promoting the growth of businesses, jobs and public revenue.

CU-ICAR is co-anchored by the **BMW Information Technology Research Center (ITRC)**. The ITRC is an 84,000 square-foot facility comprising six separate, secure research zones, a data center and a lab. The Center's research focus is onboard computing, maintenance system automation, and telematics – computer and mobile communications technology used in automotive navigation systems. The ITRC provides an important platform for joint projects between BMW and leading IT companies in the United States. BMW also has endowed two Chairs at the Campbell Graduate Engineering Center – Systems Integration and Manufacturing.

JTEKT Corp, a designer and manufacturer of bearings for automotive, agriculture, power sports, wind energy and other markets, operates an engineering technology center at CU-ICAR, the Greenville Technology Center. JTEKT acquired the technology center when it purchased the Torrington Needle Roller Bearing business from Timken Co. in 2009. Needle roller bearings are used for automotive and industrial applications, and the Greenville Technology Center is a member of JTEKT's several research and development operations. JTEKT's needle roller bearing division operates under the name Koyo Bearings USA. Koyo Bearings USA has a needle roller bearing plant in Walhalla. JTEKT Automotive makes motor vehicle transmission housings in Piedmont. Another JTEKT subsidiary, Koyo Corp, makes ball and roller bearings in Orangeburg and bearing hub assemblies in Blythewood.

The Clemson University Computational Center for Mobility Systems (CU-CCMS), the technology anchor of CU-ICAR, offers unique capabilities in engineering simulation for clients in the automotive, aviation, and related mobility system industries. The Center employs full-time, experienced computational engineers who do not have academic obligations and uses massive computing power, innovative simulation methods, and an industry-focused approach to provide faster design cycles and better "what if" analyses. CU-CCMS and **Sun Microsystems** partnered to install the 35Tflop 'AREV' HPC system at the Center, ranked as the world's 99th most powerful computer.

Michelin has partnered with CU-ICAR to study Vehicular Electronic Systems Integration, focusing on the complex field of integrating the various systems in the vehicle, such as software, telematics, information and communication systems, electronics, mechatronics, and sensors to create attractive, stable, and economical products.

Technical Education

Committed to increasing the employability of all South Carolinians by ensuring they are prepared for the careers of today.

The South Carolina Technical College System has an extensive network of 16 technical colleges whose mission is to support economic development. As a result, each college is focused on serving local business and industry needs. The technical college system works hand-in-hand with its affiliate programs: the Center for Accelerated Technology Training's readySC™ program, Apprenticeship Carolina™, and competeSC™ so companies locating in South Carolina can take full advantage of an extensive education and training network. Companies use the technical college system to train employees, offer continuing education, and keep skills up to date with the latest business and management technology.

readySC™ – an Innovative Training Development Model

For more than 40 years, readySC™ has been recognized as one of the nation's premier economic development training programs, tailored to meet your company's specific needs. Its proven training development model is a 3-D Process consisting of three phases - Discovery, Design and Delivery - to expertly provide the necessary skills, abilities and knowledge to make your project successful.